

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086

M.Sc., BIOINFORMATICS

END SEMESTER EXAMINATION APRIL 2019

PAPER: Systems Biology

TIME : 3hours

SUBJECT CODE: 15BI/PI/SB34

Max. Marks: 100

SECTION – A

(20 x 1 = 20 marks)

Answer all the Questions:

1. Define systems biology.
2. Write about modularity in systems biology
3. Comment on SOM.
4. What do you understand by metabolic networks?
5. What is Principal Component Analysis?
6. What are the major classes of biomolecules?
7. Explain Gene Expression.
8. What is gene network?
9. Define Receptor-Ligand interactions.
10. What is a microarray?
11. Define linear model data
12. Define fold-change analysis
13. What do you understand by metabolic networks?
14. Define clustering.
15. Comment on directed graph.
16. Write on hierarchical clustering?
17. Comment on text mining
18. Mention the applications of systems biology.
19. Give the significance of steady state in systems biology.
20. List few advantages of computational modeling.

SECTION-B

(4 x 10=40 marks)

ANSWER ANY FOUR QUESTION

21. Write the concept of systems biology in medicinal drug development
22. Discuss the various properties of models in systems biology.
23. Describe how mathematics is applied in the field of systems biology.
24. Give an account on how Systems biology is data integration process.
25. Explain the guidelines for the design of new organisms and its computational limitations?
26. Enumerate the experimental planning in systems biology.
27. Describe the various standard models and approaches in systems biology.

SECTION-C

(2 x 20=40 marks)

ANSWER ANY TWO QUESTION

28. Write in brief the clustering algorithms in the analysis of gene expression data.
29. Justify the significance of the following statement "systems biology is living science".
30. Discuss in detail the representation of gene network as directed and undirected graph.
31. Explain in detail the potential dangers of the emerging system biology technique?